

**Abstract**

1           A router and method for routing table cache population technique is disclosed. In particular,  
2 the illustrative embodiment routes packets through it more quickly than comparatively expensive  
3 routers in the prior art. The present invention recognizes that a fast router has small routing table cache  
4 that has a high hit ratio and that a high hit ratio can be achieved with a small routing table cache by  
5 predicting which entries will be needed in the routing table cache in the future and by populating the  
6 routing table cache with those entries before they are needed. The illustrative embodiment of the  
7 present invention comprises: an input port for receiving a succession of packets, wherein each of the  
8 packets comprises a destination address; a plurality of output ports; a switching fabric for  
9 interconnecting the input port to each of the plurality of output ports; a processor or building a  
10 temporal model of the occurrence of the destination addresses at the input port, for populating the  
11 routing table cache based on the temporal model and at least one entry that is stored in a routing table,  
12 and for routing at least one of the packets from the input port to one of the output ports through the  
13 switching fabric based on the entry that is stored in the routing table cache.